

CLAIMS

What is claimed is:

1. A router comprising:
  - a) a first port for receiving a packet having a label, a header and a payload;
  - b) a table associated with the label; and
  - c) a processor for processing the packet in accordance with the table.
2. The router as recited by claim 1 wherein in the table is a route table.
3. The router as recited by claim 1 wherein the table is a forwarding table.
4. The router as recited by claim 1 wherein the label identifies a virtual private network.
5. The router as recited by claim 1 further having a second port for transmitting said packet.
6. The router as recited by claim 1 wherein the header is an internet protocol header.
7. The router as recited by claim 1 wherein the label comprising information identifying a virtual private network and a forwarding label.

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8. A method of routing in a network comprising:
- a) maintaining a first table corresponding to a first virtual private network;
  - b) maintaining a second table corresponding to a second virtual private network;
  - c) routing a packet based on the first table or the second table

9. The method as recited by claim 8 wherein the first table and the second table are route tables.

10. The method as recited by claim 8 wherein the first table and the second table are forwarding tables

11. The method as recited by claim 9 further comprising the step of maintaining forwarding table indexable by a virtual private network identifier.

12. The method as recited by claim 8 wherein the packet comprises a label, a header and a payload.

13. The method as recited by claim 8 wherein the label comprises information identifying a virtual private network.

14. The method as recited by claim 8 wherein the label comprises information identifying a virtual private network and a forwarding label.

15. The method as recited by claim 9 wherein the first table or the second route table is chosen for routing the packet based on the label.

16. A method of routing in a network comprising:
- a) maintaining a first forwarding table corresponding to a first virtual private network;
  - b) maintaining a second forwarding table corresponding to a second virtual private network;
  - c) routing a packet based on the first forwarding table or the forwarding table

17. The method as recited by claim 16 wherein the packet comprises a label, a header and a payload.

18. The method as recited by claim 16 wherein the label comprises information identifying a virtual private network.

19. The method as recited by claim 16 wherein the label comprises information identifying a virtual private network and a forwarding label.

20. The method as recited by claim 16 wherein the first table or the second table is chosen for routing the packet based on the label.

21. A network comprising:
- a) a first edge router coupled to receive a packet having a first header and a second header and to transmit into a wide area

network cloud a modified packet having a label, the first header and the second header;

- b) a backbone router coupled to receive the modified packet and route the modified packet based on a route table associated with the label; and
- c) a second edge router coupled to receive the modified packet.

22. The network as recited by claim 21 wherein the label comprises information identifying a virtual private network.

23. The network as recited by claim 21 wherein the label comprises information identifying a virtual private network and a forwarding label.

24. The network as recited by claim 21 wherein the backbone router comprises a second route table.

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